**Lab 4 - MapReduce**

1. Description of the task you are solving.

The task is to group the records by category and sort them by price within each category.

1. Format of your input and output.

* Input: The input records are provided as a list of tuples, where each tuple represents a record with the format **(category, name, price)**.
* Output: The output is printed to the console, displaying the category, name, and price for each record, grouped by category and sorted by price.

1. Explanation of your Map and Reduce functions.
2. First MapReduce step: Group by category

* **group\_func** function:

The **group\_func** function takes a record as input, which consists of a category, name, and price.

Inside the function, the category, name, and price values are extracted from the record.

The function returns a tuple with the category as the key and a list containing a single tuple **(name, price)** as the value.

This function is used in the first map step to group the records by category.

* **reduce\_func** function:

The **reduce\_func** function takes two pairs of key-value pairs as input, representing records with the same category.

In this case, the key is the category, and the value is a list of tuples **(name, price)**.

The function concatenates the two lists of tuples and returns the combined list.

This function is used in the reduce step to combine the values associated with the same category key.

1. Second MapReduce step: Sort records within each category

* **sort\_func** function:

The **sort\_func** function takes a pair as input, where the key is the category and the value is a list of tuples **(name, price)**.

Inside the function, the category and items are extracted from the pair.

The **sorted** function is used to sort the items based on the price (the second element of each tuple) using a lambda function as the key.

The sorted items are then returned as a list of tuples.

This function is used in the second map step to sort the records within each category based on price.

1. Verification method used to validate the result.

The verification method used in my code is printing the results to the console. The code iterates over the **sorted\_records** and prints the category, name, and price for each item within each category. This allows me to visually validate the correctness of the grouping and sorting operations.

1. My code

